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INTELLIGENCE ASSUMPTIONS
FOR PLANNING: SOVIET
ICBM SITES, 1961-1967

Guided Missiles Task Force
Contribution to
Office of National Estimates

CIA/RR EP 61-82

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CENTRAL INTELLIGENCE AGENCY

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FOREWORD

This contribution, prepared in response to Terms of Reference,
Intelligence Assumptions for Planning: Soviet ICBM Sites, 1961-
1967, dated 27 October 1961, is primarily addressed to the type
and number of Soviet ICBM sites beyond mid-1963 where the discussion
in NIE 11-8/1-61 ends. The material presented herein on the 1964-67
period is highly tentative and should be viewed as reasonable
assumptions as to the current Soviet plans about the future to the
extent that they exist. We still believe that a fully meaningful
"estimate" based on evidence for a period so far into the future
in a field which is changing so rapidly is virtually impossible.

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A. Introduction

We have sufficient evidence to warrant a relatively high degree of confidence in our current estimate (NIE 11-8/1-61) of the general nature and magnitude of the Soviet ICBM force through mid-1963.

This evidence indicates that there has been only limited deployment of the first-generation ICBM and that, as the result of decisions apparently made in 1958, the Soviet operational force will begin to grow significantly during 1962, with a liquid-fueled weapon deployed on soft sites defended against air attack but relatively vulnerable to missile attack. The evidence also indicates that, even in the unlikely event that Soviet leaders have already decided to undertake a program of hard sites, the earliest date by which an operational capability could be attained would be about 1964.

Our judgment of the probable course of the program after 1963 is based on much more indirect evidence and, of necessity, on our view of probable Soviet strategic objectives. We are influenced by the timing and observed magnitude of the Soviet ABM program, which indicates that the USSR has placed a high priority on early attainment of an operational defense against the US ballistic missile threat. We have also taken account of the evident desire of the Soviet leaders to attain an MRCM force providing maximum strategic flexibility, enabling the USSR to follow policies with respect to Western Europe ranging from strong deterrence to ballistic

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blackmail. While Soviet MRBM policy is not necessarily applicable to their ICBM program, because of the vastly different nature of the target systems confronted, it nevertheless demonstrates that the USSR has seized one opportunity to achieve a position of imposing military strength relative to the West. While we are confident that the Soviet ICBM force will continue to grow beyond the level we have estimated for mid-1963, we emphasize that the assumptions which follow, particularly for the period 1965-67, are based almost exclusively on judgments of the most likely Soviet view of the broad and complex factors discussed below.

The scale and technical characteristics of the Soviet ICBM force probably have been and will be determined in large measure by the Soviet estimate of the future target systems presented by US strategic attack forces. When the initial basic decisions on the first generation ICBM were made in 1954-55, the military and urban strategic target systems facing the USSR were soft and--except for a few aircraft carriers--fixed. These target systems did not impose stringent technical requirements on the first generation system which, for all practical purposes, was equally effective against military or urban targets.

By 1958-59 when the basic decisions on the Soviet second generation ICBM appear to have been made, the US trend toward hard launch sites with quick system reaction times was well advanced

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and appeared likely to go further. During the period 1962-1967 the USSR can expect to be faced with three distinct strategic target systems: urban and military targets which are fixed and soft, over 1,000 ICBM launch sites hardened from 200 to 300 psi, and the mobile Polaris system. By 1958-59 it probably was clear to Soviet military planners that the large and costly first generation Soviet ICBM would have only marginal effectiveness against the rapidly increasing hardened US target system of the mid-sixties.

US statements, its political machinery, philosophy and relations with its allies, as well as the nature of its ICBM force probably all indicate to the Soviets that the US does not intend to strike first and would find it extremely difficult under any circumstances to do so. The hardness and mobility of emerging US ICBM systems together with the rather low yields and relatively large CEPs of the principal portion of the US ICBM force clearly are designed to survive and retaliate rather than strike first.

Soviet planners probably conclude that they have a high probability of receiving strategic warning in the unlikely event that the US should decide to initiate an attack. They would also have a fair degree of confidence in tactical warning through clandestine and technical intelligence media. Therefore, the USSR, more than the US, could be reasonably assured of being able to carry out a pre-emptive strike with a relatively higher probability of

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surprise should the international climate, in their view, require such action.

B. Soviet Policy Alternatives

Faced with large scale US programs to deploy hardened ICBMs, Soviet leaders probably realized that a deliberate initiation of war on their part, which would depend primarily on ICBMs, would require so large an ICBM force as to be out of the question.* The use of a mixed attack force of ICBMs, bombers with air-to-surface missiles and submarine-launched missiles might reduce the over-all cost of a Soviet pre-meditated attack somewhat, but the costs of obtaining a high degree of assurance of destroying US hardened ICBMs would still be out of the question.

Having reached this conclusion, Soviet leaders would have to decide whether merely to attempt to deter war by the threat of a retaliatory force,** or whether they wished to be able to fight a

* The JCS requirements study presents ICBM on launcher requirements for 70 percent assurance against all US strategic targets as follows:

| Mid-Year | Warhead Yield | | |
|----------|---------------|-------|--------|
| | 7 mt | 20 mt | 100 mt |
| 1962 | 3,800 | 2,300 | 1,100 |
| 1963 | 15,300 | 7,800 | 2,700 |
| 1964 | 14,100 | 7,800 | 3,000 |
| 1965 | 13,600 | 6,300 | 3,900 |

** A retaliatory force is one which can be reasonably expected to survive any initial enemy attack in sufficient force to be capable of inflicting unacceptable losses on an enemy.

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war on their own initiative by delivering a first blow in the event they felt an enemy attack to be inevitable or where vital national interests were at stake. A pre-emptive or blunting attack simply describes a situation in which the existing capabilities of the attacker are used first so that the weight of the enemy's counter-attack or retaliation is reduced as much as possible. NIE 11-8-61 reasoned that the USSR will seek to acquire a sizeable pre-emptive capability considerably above a minimum deterrent--a force large enough to deliver a sizeable attack on most of the US strategic forces if deterrence appeared to be failing or vital national interests were involved.

We believe that the Soviet second generation ICBM probably has been designed with the payload, accuracy and reliability specifications required to be effective against US hard sites and that the deployment will be on a scale intended to provide some pre-emptive or blunting capability.

W.C. [initials]

Soviet planners would have to weigh various alternatives which would increase the survivability of their ICBM force against a possible attack from the West should deterrence fail. If they believed that the precise location of ICBM sites could be determined in advance by the West, they could respond by building hardened or mobile systems, disperse and increase the number of soft sites, or provide anti-aircraft and anti-missile defenses

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for their sites. Among the passive defensive measures, we believe that the Soviets have chosen to increase and disperse the number of ICBM sites rather than build very hard or mobile land-based ICBM systems. Such a choice provides not only survivability through numbers but also a far larger force of ICBMs for pre-emptive attack. The hardening requirement to counter a Polaris or Minuteman attack, however, is far less than that for large yield, accurate weapons such as Titan II. In light of this the Soviets may plan to harden their second generation system missile-hold and related facilities to about 25 psi which would be sufficient to preserve a large part of their force. Although there is no direct evidence to support this view, we believe it is much more likely that measures will or have been taken to provide a small degree of hardening than hardening on the order of 100 to 300 psi.

1. ABM Defense

We are very much influenced in our judgments of the course and magnitude of the future Soviet ICBM force by the clear evidence that the USSR has been pursuing an extensive and vigorous program to attain an ABM capability even though the ultimate effectiveness of this Soviet system is far from certain. US mobile strategic missile programs have already made an ABM program a necessary part of the Soviet strategic plan. The available evidence shows conclusively that the ABM program has proceeded in parallel with the

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ICBM and MREM/IIBM programs.

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We believe that, on purely military grounds, active defense of ICBM sites is a more reasonable alternative to the Soviets than hardening,--assuming a Soviet capability to develop a feasible defense. Historically, the Soviets have shown a marked predilection for active defensive measures. The emphasis on defensive measures is well illustrated by the relative scale and priority of defensive systems as compared to offensive systems. Existing ICBM and MREM site, for example, are defended by SAMs. Deployment of an ABM system to protect the major Soviet urban and industrial centers would be consistent with the past and complements the requirement to defend Soviet strategic missiles.

2
Priority

Another attractive feature of the ABM to the Soviet military planner arises out of the characteristics of the Polaris and Minuteman systems which will form an increasing share of US strategic missile forces during the next few years. These are deterrent-retaliatory systems with relatively large CEPs, relatively small payloads, and relatively limited decoy or warhead protection capabilities of the type which might be necessary to penetrate an effective Soviet ABM system.

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These considerations probably are reinforced by the comparative cost effectiveness of the alternatives. As AEM systems are developed and deployed to protect Soviet urban and industrial targets, the deployment of additional AEM units to protect ICBM sites may be less costly than hardening. This would be particularly true if the AEM system had some area defense capability so that ICBM sites would be included in the same perimeters as some of the defended urban and industrial targets.

The timing of the Soviet AEM program appears to fit rather well with the timing of the second generation ICBM program. The final go-ahead on large AEM program may have been given in 1958 about the same time that the decision to cut back the first generation ICBM program and push the second generation system apparently was taken. 1958 seems to be the latest point in time when the large resource commitments to the AEM program could have been efficiently cut back. On balance we believe, therefore, that Soviet AEM systems programming has included protection of the second generation Soviet ICBM launch sites and that a high degree of hardening probably is not planned.

2. Strategic Advantages of Soviet Deployment of Very Heavy Payloads

In the eyes of Soviet leaders and military planners, and probably of Khrushchev in particular, there probably are cogent

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reasons for deploying weapon systems capable of delivering nuclear weapons up to 100 megatons. Either a very large ICBM or an orbital bombardment system or a mix of the two, could be employed to deliver such payloads.

The two most appealing reasons for Soviet deployment of very heavy payloads probably are the political and psychological advantages they believe this capability would provide and the potential effectiveness of very large weapons against US command and control centers, particularly very hard (500 to 1,000 psi) installations. We believe that the Soviet political leaders and military planners see distinct strategic advantages in deploying systems capable of delivering very large payloads and that one of the objectives of the current nuclear test series is to develop a family of very large nuclear weapons up to and including weapons in the 20-50 megaton range.

3. Some Considerations for a Soviet Orbital Bombardment System

Despite certain advantages unmanned orbital bombardment systems are not considered worthwhile substitutes for ICBMs on military grounds. Nevertheless, if certain reliability and recovery problems could be overcome, unmanned orbital systems would offer certain political and psychological advantages over ground-based ICBM systems. Although a limited force of orbital bombardment weapons in the 50 to 100 megaton range cannot be

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excluded as part of a mixed force where ground-based ICBMs predominate, we believe it is much less likely than other delivery systems.

C. Consequences of Improved US Intelligence Collection Techniques for Soviet Deployment Methods

Soviet decisions on their ICBM force levels and deployment modes almost certainly took into account the Soviet estimate of the current status and the future trends in US intelligence collection capabilities. The current Soviet program to deploy ICBMs at soft unconcealed sites indicates they believe either that Western intelligence will be unable to locate the bulk of such sites, or that, even if detected, effective countermeasures can be devised in the future. Even if Soviet leaders were to believe that US intelligence collection techniques are better than those assumed when the decisions on their current ICBM program were made, they have a number of alternatives available, including the building of very hard launch sites--100 psi or more. Other alternatives include camouflage, deception, dispersal and duplication, and active protection with perhaps also limited hardening, say 25 psi; or some combination of these methods.

It is unlikely that the Soviets would regard camouflage as an assured method of concealing sites against future [redacted] collection although it could be used to introduce uncertainties as to the

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precise location and function of various facilities even if the general area can be located. Deception in the form of dummy facilities probably could be used to achieve or to add to the uncertainty of precise location effect. They would probably judge that any reconnaissance system that would reveal the location of soft unconcealed sites would also reveal the construction of hardened underground sites.

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Greater dispersal of launch facilities than presently practiced could reduce the vulnerability of the Soviet sites. [redacted]

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[Large rectangular redacted area]

It should be noted that the measures outlined above, singly or in combination, would be particularly effective against attacking missile systems with relatively large CEP and relatively small warheads such as Polaris or Minuteman. A combination of some of these measures with ABM defense probably would insure in the minds

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of Soviet planners a sufficiently high survival rate to provide a creditable deterrent in the event the Soviets should not succeed in striking the first blow.

We do not believe that the Soviets would attempt to make a large liquid fueled ICBM system rail mobile. We doubt if they can produce and deploy a rail mobile solid fueled ICBM vehicle which would have the technical characteristics required for a pre-emptive strike strategy by 1965-66.

Insel A

D. Later Generation Systems

The timing and characteristics of later generation ICBM systems, which could become available in the 1965-67 period, will depend in large measure on the long run suitability of the second generation system now beginning to be deployed. If this system employs storable propellants, is highly accurate, and can have all-inertial guidance, we would expect it to be deployed in large numbers and probably constitute the major part of the Soviet ICBM force in the 1966-67 period. However, current evidence is inconclusive with respect to all of the foregoing aspects of this system. We believe, therefore, that for planning purposes it should be assumed that the second generation system will prove generally satisfactory, but that by about 1965 a later system involving improvements will become available. The rate at which the later system is acquired will depend on the relative merits of the preceding systems.

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Neither the present nor the subsequent system will rely on extreme hardening for protection, but will have been designed for deployment in substantial numbers, and will depend for protection primarily on an active ABM defense. Some hardening to about 25 psi will be undertaken to improve survivability but this will be intended only against the Minuteman/Polaris systems.

// Too soon!

E. Conclusions

In summary, from the current evidence and the logic of the situation we do not foresee the USSR employing extreme hardening for protection of its ICBM sites. From the Soviet point of view, the advantage of obtaining survivability through dispersion and increase of numbers of launchers is the acquisition of a larger potential pre-emptive force should deterrence fail or national interests be jeopardized. We feel that the Soviets will continue to have their major ICBM force equipped with multi-megaton warheads and that they will acquire some ICBMs with ultra-high yield (20 to 50 mt) warheads. The major portion of the Soviet ICBM force in the 1966-67 period will probably use storable propellants and have only a limited reload capability. In keeping with our view that the Soviet objective probably is an ICBM force which is larger than a minimum deterrent, but that a truly first-strike capability is clearly out of reach, we project the following numbers as reasonable assumptions of ICBMs on launchers:

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| | <u>First Generation</u> | <u>Second** Generation</u> | <u>Third** Generation</u> | <u>Total</u> |
|----------|-------------------------|----------------------------|---------------------------|--------------|
| Mid-1961 | 10-25 | — | — | 10-25 |
| Mid-1962 | 10-25 | 50 | — | 60-75 |
| Mid-1963 | 25* | 150 | — | 175 |
| Mid-1964 | 25* | 275 | — | 300 |
| Mid-1965 | 25* | 400-425 | 0-25 | 450 |
| Mid-1966 | 25* | 600-700 | 0-100 | 700 |
| Mid-1967 | 25* | 600-800 | 0-200 | 800 |

* Re-equipped with ultra-high yield warheads (20 to 50 mt).

** Some hardening to, say, 25 psi possible; greater hardening unlikely.

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